THE BRAIN: UNDERSTANDING NEUROBIOLOGY THROUGH THE STUDY OF ADDICTION		
Massachusetts Science Learning Standards: High School Biology, Science Inquiry Skills		
Lesson	**Standard**	**Description**
2, 3, 4	4.4	Explain how the nervous system (brain, spinal cord, sensory neurons, motor neurons) mediates communication among different parts of the body and mediates the body's interactions with the environment. Identify the basic unit of the nervous system, the neuron, and explain generally how it works.
1, 2, 3, 4	4.7	Recognize that communication among cells is required for coordination of body functions. The nerves communicate with electrochemical signals, hormones circulate through the blood, and some cells produce signals to communicate only with nearby cells.
1, 2, 3, 4	4.8	Recognize that the body's systems interact to maintain homeostasis. Describe the basic function of a physiological feedback loop.
All lessons	SIS1.1	Observe the world from a scientific perspective.
2, 3, 4, 5	SIS1.2	Pose questions and form hypotheses based on personal observations, scientific articles, experiments, and knowledge.
All lessons	SIS1.3	Read, interpret, and examine the credibility and validity of scientific claims in different sources of information, such as scientific articles, advertisements, or media stories.
2, 3, 4	SIS2.1	Articulate and explain the major concepts being investigated and the purpose of an investigation.
2, 3, 4	SIS2.3	Identify independent and dependent variables.
2, 3, 4, 5	SIS2.5	Employ appropriate methods for accurately and consistently: making observations, making and recording measurements at appropriate levels of precision, and collecting data or evidence in an organized way.
2, 3, 4, 5	SIS2.6	Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes, computers) including set-up, calibration (if required), technique, maintenance, and storage.
2, 3, 4	SIS3.1	Present relationships between and among variables in appropriate forms. Represent data and relationships between and among variables in charts and graphs. Use appropriate technology (e.g., graphing software) and other tools.
3, 4	SIS3.2	Use mathematical operations to analyze and interpret data results.
3, 4	SIS3.3	Assess the reliability of data and identify reasons for inconsistent results, such as sources of error or uncontrolled conditions.
2, 3, 4	SIS3.4	Use results of an experiment to develop a conclusion to an investigation that addresses the initial questions and supports or refutes the stated hypothesis.
2, 3, 4	SIS3.5	State questions raised by an experiment that may require further investigation.
All lessons	SIS4.1	Develop descriptions of and explanations for scientific concepts that were a focus of one or more investigations.
2, 3, 4	SIS4.2	Review information, explain statistical analysis, and summarize data collected and analyzed as the result of an investigation.

2, 3, 4	SIS4.3	Explain diagrams and charts that represent relationships of variables.
2, 3, 4, 5	SIS4.4	Construct a reasoned argument and respond appropriately to critical comments and questions.
2, 3, 4, 5	SIS4.5	Use language and vocabulary appropriately, speak clearly and logically, and use appropriate technology (e.g., presentation software) and other tools to present findings.
1, 2, 3, 4	SIS4.6	Use and refine scientific models that simulate physical processes or phenomena.

Massachusetts Mathematics Learning Standards: Grades 9 & 10

Lesson	Standard	Description
3, 4	10.P.7	Solve everyday problems that can be modeled using linear, reciprocal, quadratic, or exponential functions. Apply appropriate tabular, graphical, or symbolic methods to the solution. Include compound interest, and direct and inverse variation problems. Use technology when appropriate.
3, 4	10.P.8	Solve everyday problems that can be modeled using systems of linear equations or inequalities. Apply algebraic and graphical methods to the solution. Use technology when appropriate. Include mixture, rate, and work problems
3	10.M.4	Describe the effects of approximate error in measurement and rounding on measurements and on computed values from measurements.
3, 4	10.D.1	Select, create, and interpret an appropriate graphical representation (e.g., scatterplot, table, stem-and-leaf plots, box-and-whisker plots, circle graph, line graph, and line plot) for a set of data and use appropriate statistics (e.g., mean, median, range, and mode) to communicate information about the data. Use these notions to compare different sets of data.
3, 4	10.D.3	Describe and explain how the relative sizes of a sample and the population affect the validity of predictions from a set of data.

Massachusetts English Language Arts Learning Standards: Grades 9 & 10

Lesson	Standard	Description
2, 3, 4, 5	1.5	Identify and practice techniques such as setting time limits for speakers and deadlines for decision-making to improve productivity of group discussions.
All lessons	2.5	Summarize in a coherent and organized way information and ideas learned from a focused discussion.
All lessons	6.8	Identify content-specific vocabulary, terminology, or jargon unique to particular social or professional groups.
All lessons	8.10	Restate main ideas.
All lessons	8.15	Locate facts that answer the reader's questions.
All lessons	8.16	Distinguish cause from effect.
All lessons	8.17	Distinguish fact from opinion or fiction.
All lessons	8.22	Identify and analyze main ideas, supporting ideas, and supporting details.
All lessons	8.27	Identify evidence used to support an argument.

4, 5	19.26	Write well-organized essays *(persuasive, literary, personal)* that have a clear focus, logical development, effective use of detail, and variety in sentence structure
3, 4	19.27	Write well-organized research papers that prove a thesis statement using logical organization, effective supporting evidence, and variety in sentence structure.
All lessons	20.5	Use different levels of formality, style, and tone when composing for different audiences.
All lessons	22.9	Use standard English spelling when writing and editing.
3, 4	24.5	Formulate open-ended research questions and apply steps for obtaining and evaluating information from a variety of sources, organizing information, documenting sources in a consistent and standard format, and presenting research.
2, 3, 4, 5	26.5	Analyze visual or aural techniques used in a media message for a particular audience and evaluate their effectiveness.

Massachusetts Comprehensive Health Learning Standards: High School		
Lesson	**Standard**	**Description**
1, 3, 4, 5	1.11	Describe the impact of behavior and environment on failure of body systems (nervous, muscular, skeletal, circulatory, respiratory, endocrine, and excretory systems).
4, 5	2.24	Identify life-management skills and protective factors that contribute to achieving personal wellness health goals, including researching, evaluating, and implementing strategies to manage personal wellness, monitor progress, and revise plans.
3, 4, 5	5.13	Analyze research on health behaviors and brain chemistry and emotional functioning.
4, 5	5.16	Describe the signs of destructive behavior, and identify intervention strategies and kinds of professional intervention.
4, 5	7.12	Describe the influence of the larger social group on individual conduct (such as giving comfort, solving problems, and controlling deviant behavior through enforcing laws and the development of good character in the members of society).
4, 5	7.14	Explain the purpose of friendship in different stages of the life cycle and describe how friends can support one another in making healthy decisions.
4, 5	8.14	Identify positive health behaviors that reduce the risk of disease.
4	8.18	Analyze the interaction between genetics and disease.
4, 5	8.a	Analyze the influence of factors (such as social and economic) on the treatment and management of illness.
5	8.c	Analyze the effects of urbanization, medical advances, politics, and public opinion on the transmission, prevention, and treatment of disease.
3, 4, 5	10.9	Describe the relationship between multi-drug use and the increased negative effects on the body, including the stages of addiction, and overdose.
3, 4, 5	10.12	Explain the physical, financial, social, and psychological cost of addiction.
3, 4, 5	10.13	Demonstrate the ability to make informed decisions regarding the use of tobacco, alcohol, and other drugs.

4, 5	**10.14**	Describe the influence of drug abuse on family members.
3, 4, 5	**10.15**	Apply promotion skills to encourage healthy behaviors (such as identifying and evaluating initiatives and opportunities for promotion, collecting and disseminating information, and modeling).
4, 5	**12.c**	Evaluate methods to determine the accuracy of emerging health research.
4, 5	**14.7**	Analyze the effects of diseases on the community and society.
4, 5	**14.10**	Identify prevalent health concerns and health promotion initiatives in the United States and compare with other parts of the world.
4, 5	**14.c**	Analyze the reciprocal relationships among social, economic, and environmental factors and community and public health.
4, 5	**14.e**	Learn to evaluate local, national, and international health related statistics.